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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,890	12/22/1999	PATRICK D. SMITH	PD05924AM	6738

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT PAPER NUMBER

2631

DATE MAILED: 06/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/470,890

Applicant(s)

SMITH ET AL.

Examiner

Kevin M Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-33, 35, 36, 38 and 39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-33, 35, 36, 38 and 39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

1. This office action, in response to the remarks filed 4/19/2004, is a non-final office action.

***Response to Arguments***

2. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.
3. The objection to the oath/declaration is withdrawn.
4. Applicant's arguments, see the response filed 4/19/2004, with respect to the rejections of claims under 35 USC 102(e) and 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Jokinen (WO 98/18210).

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-3, 5-18, 29-31, 33, 35 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Jokinen (WO 98/18210).

Regarding claims 1, 7-10, 12, 14, 16-18, 29, 35, 38, Jokinen discloses a method for identifying impairments (interferers) in a digitally modulated system (page 1, lines

19-21). Data is recovered from the modulated signal. Pluralities of impairment masks are applied to the data (page 11, lines 13-19). A correlation weight is calculated based on the received data and the weights determine the likelihood that a particular impairment type is affecting the received signal (page 6, lines 8-21). Examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9). The system detects a plurality of interferers starting at the strongest interferer (page 14, lines 3-9). Each one of these interferers is a different impairment type. The correlation weights determine if a specific interferer is interfering with the signal.

Regarding claims 2 and 30, identification of interfering components of the signal and specific interferers allows improvement in the transmission quality, normalizing the received data recovered in the receiver.

Regarding claims 3, 11 and 31, examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9).

Regarding claims 5 and 33, cancellation of interference in the received signal and interference caused by specific interferers overcomes the occurrences of fading in the channel.

Regarding claim 13, the channel estimations are saved in a memory (page 6, lines 22-28).

Regarding claim 15, the amount of interference in a signal is measured (page 14, lines 3-9).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4, 32, 36 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jokinen (WO 98/18210) in view of Hewitt (US 6,526,538).

Regarding claims 4, 32, 36 and 39, Jokinen discloses a method for identifying impairments stated above in paragraph 5. Jokinen does not disclose providing a three dimensional presentation of the distribution of the soft decision data over time. Hewitt discloses an encoding scheme with three-dimensional coding schemes or higher (column 6, lines 36-44). To display this data, all three dimensions (x, y and z) must be included (column 4, lines 24-37). Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize three-dimensional encoding of the data streams in the adaptive rate modulator. This would allow more information to be transmitted and then recovered over the communication channel.

6. Claims 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jokinen (WO 98/18210).

Regarding claim 19, 21, 22, 24, 26 and 27, Jokinen discloses a method for identifying impairments (interferers) in a digitally modulated system (page 1, lines 19-21). Data is recovered from the modulated signal. Pluralities of impairment masks are applied to the data (page 11, lines 13-19). A correlation weight is calculated based on the received data and the weights determine the likelihood that a particular impairment type is affecting the received signal (page 6, lines 8-21). Examples of the plurality of impairment masks that are used to determine the interference are whether the interference is direct or reflected (the paths the interfering signal takes, page 11, lines 13-19) and the number of interfering (noise) components present within the received signal (the strength of the interfering signal, page 14, lines 3-9). The system detects a plurality of interferers starting at the strongest interferer (page 14, lines 3-9). Each one of these interferers is a different impairment type. The correlation weights determine if a specific interferer is interfering with the signal. Jokinen does not disclose this system for removing interference occurs in a cable modem system. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the method disclosed by Jokinen to detect interferers and remove the affects of this interference in the received signal in any communication system including a cable modem system. This allows each communication system to operate more efficiently and interference free.

Regarding claims 20 and 25, the channel estimations are saved in a memory (page 6, lines 22-28).

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Regarding claims 23 and 28, the amount of interference in a signal is measured  
(page 14, lines 3-9).

***Contact Information***

**Any response to this final action should be mailed to:**

**Box AF**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314, (for formal communications; please mark  
"EXPEDITED PROCEDURE" or for informal or draft  
communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive,  
Arlington, VA. Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the  
examiner should be directed to Kevin Burd, whose telephone number is (703) 308-  
7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM -  
6:00 PM.

Any inquiry of a general nature or relating to the status of this application should  
be directed to the Group receptionist whose telephone number is (703) 305-3800.



Kevin M. Burd  
PATENT EXAMINER  
5/30/2004